

ABSTRACT

METHOD FOR COATING A METAL SURFACE WITH AN ULTRA-FINE LAYER

5 The present invention relates to a method for continuously coating a substrate in motion such as a metal strip made of steel, the coating formed being an ultra-fine film of a thickness between 10 and 100nm, deposited on the substrate:

10 - from a solution containing nanoparticles of oxides,
- in conditions of controlled pH,
- said substrate being at a temperature higher than 120°C,
- the total duration of the deposition being less than 5
seconds and preferably less than 1 second,

15 characterised in that at least one chemical additive, called
a "refiner", is incorporated into said solution, said refiner
having, mutatis mutandis, the effect of restricting the
formation of said coating.

20 (Figure 1)

Legend of the figures

Fig. 2a: Treating solution

Overheated liquid, precipitation zone

Growing sphere of vapour

25 Metal

Fig.2b: Overheated solution, precipitation zone

Metal

Fig.3: Useful zone with refiners

Useful zone without refiners

30 Thickness (nm)

Temperature of the strip (°C)

Without refiners

With refiners